PART III

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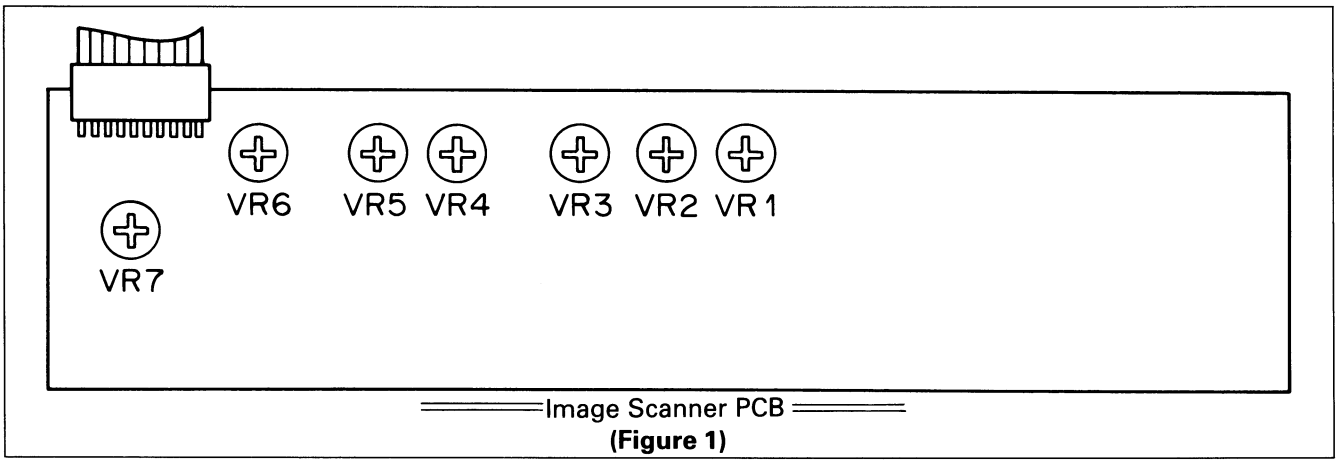
REFERENCE

- The Reference Chart for Setting the Pulses of Thermal Power
- IT · I/O PCB; FA
- IT · I/O PCB (GA) — FA

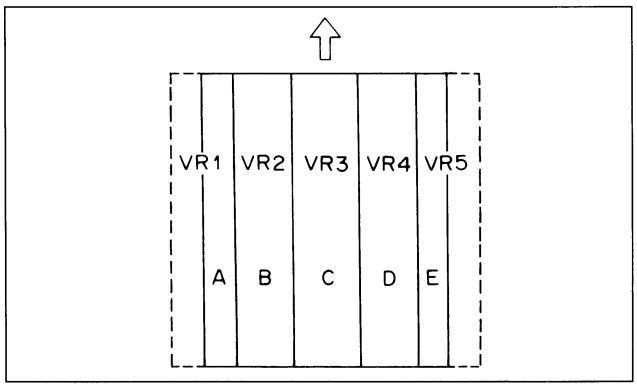
1. CCD VIDEO SIGNAL

The CCDs in the Image Scanner are divided into 5 blocks. The individual sensitivity of each block can be adjusted by its corresponding VR. The black level voltage and the overall gain voltage of the whole Video Signal are also adjustable by VR6 and VR7 **(See figure 1).**



(Figure 1)

VR 1 = A Block gain adjustment
VR 2 = B Block gain adjustment
VR 3 = C Block gain adjustment
VR 4 = D Block gain adjustment
VR 5 = E Block gain adjustment
VR 6 = Black level voltage adjustment
VR 7 = The overall gain voltage adjustment



Test Copy Settings (used to determine if adjustments are necessary)

1) Set the **Original Select** to the Photo mode.

2) Set the **Master-Making Density Dial** on the sub-panel at the center.

3) Use **test chart No. 10** as an original, set the printing speed at No. 4 and make a test copy.

※ Visually check the printed copy; If there is a difference in density among the individual blocks (A to E) on the printed copy, proceed with the following adjustment.

1. VR1-VR5: individual block gain adjustment

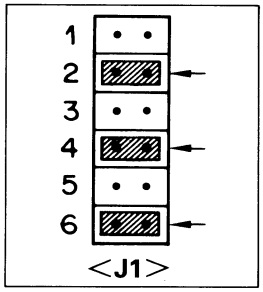
Note: The following adjustments can be accomplished with the use of an oscilloscope connected to test points TP10 and TP1 ground on IT · I/O PCB (A). However, if an oscilloscope is not available you can use test chart No. 10 for these adjustments.

1) Remove Upper Cover from the Master-making unit and by-pass safety switch.

2) Remove the Image Scanner PCB cover.

3) Place a carrier sheet upside down (or a pure white sheet of paper) under the Image Scanner during steps 4-6.
   ※ Make sure that there is no stain on a carrier sheet.

4) Locate **J1** on IT · I/O PCB (A) and remove a jumper on **Pins 4** and place it on **Pins 3**. This will light up the LED arrays.



1. For factory adjustment
2. Normal position
3. For lighting up LED arrays of Image Scanner
4. Normal position
5. For compensation with shading
6. Normal position

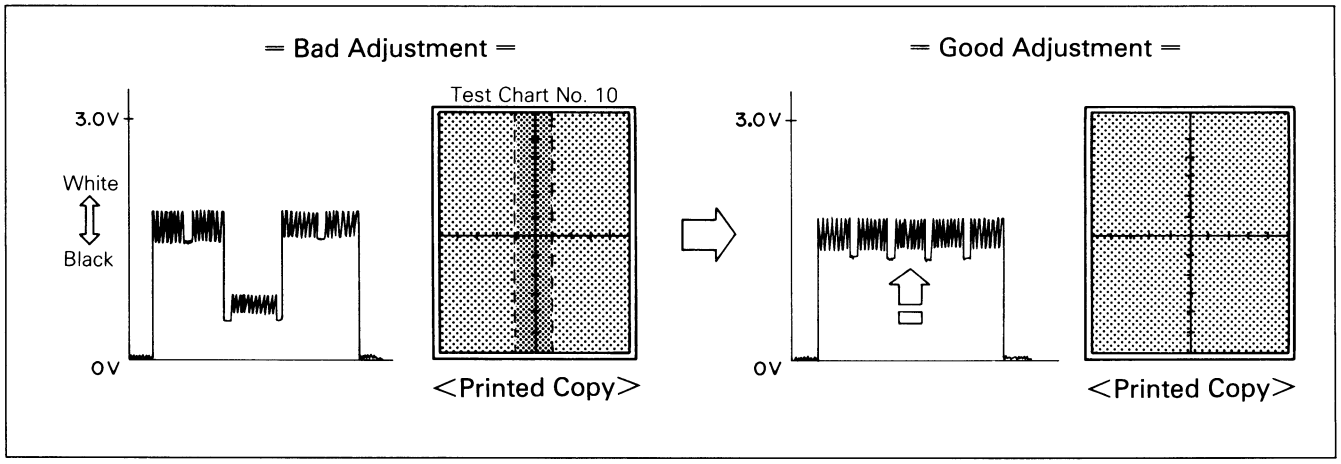
5) The sensitivity of each block can now be adjusted by **VR1 — VR5** on the Image Scanner PCB for an approximate **3.0 volt** level. **(See figure 4)**.
   ※ Turning VR counter-clockwise increases the sensitivity and voltage level.

6) After adjusting a single or multiple VR, locate J1 on IT · I/O PCB (A) and remove a jumper on **Pins 6** and place it on **Pins 5** and then back to **Pins 6**. Leave it as it is for more than **30 seconds**. This step will reset 'compensation with shading'.
   ※ Do not move Image Scanner or machine during 'compensation with shading'.
   ※ Never fail to make 'compensation with shading' every time the sensitivity of CCDs has been adjusted.

7) Remove the carrier sheet and replace the jumper in J1 (that lights up the LED arrays) to the normal position.

8) Make a test copy with **test chart No. 10** and check the result.

Repeat adjustment procedures 3) — 6) if necessary.



<Fig. 4>

2. VR6: Black Level Voltage Adjustment

Note: The following adjustments can be accomplished with the use of an oscilloscope or a volt meter.

1) Remove Upper Cover from the Master-making unit and by-pass safety switch.

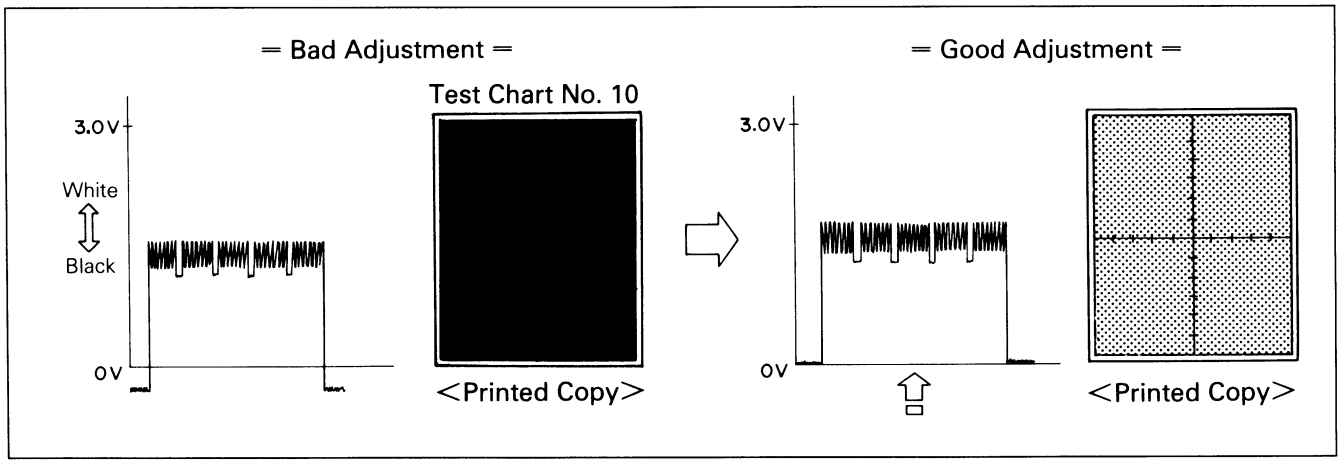
2) Remove the Image Scanner PCB cover.

3) Leave LED arrays of Image Scanner **OFF**.

4) Turn power switch off and connect a volt meter or an oscilloscope to **TP10** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

5) Turn power switch **ON** and check voltage reading for approximately **0 volt**. If incorrect, adjust with **VR6** on **Image Scanner PCB** for the correct value. **(See figure 5)**
※ Turning **VR** clockwise decreases the voltage value.

6) After adjustment, never fail to make 'compensation with shading': **(Refer to P.II-17.)**



<Fig. 5>

3. VR7: The Overall Gain Voltage Adjustment

Note: The following adjustment can be accomplished with the use of an oscilloscope or a volt meter.

1) Remove Upper Cover from the Master-making unit and by-pass safety switch.

2) Remove the Image Scanner PCB cover.

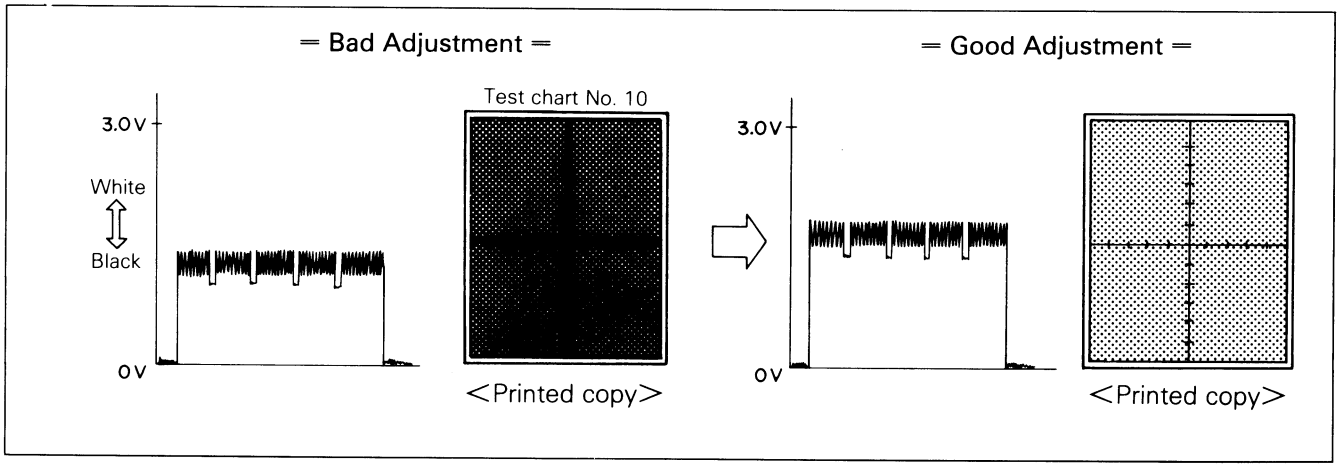
3) Place a carrier sheet upside down (or a pure white sheet of paper) under the Image Scanner.
   ※ Make sure that there is no stain on a carrier sheet.

4) Locate **J1** on IT · I/O PCB (A) and remove a jumper on **Pins 4** and place it on **Pins 3**. This will light up the LED arrays.

5) Turn power switch off and connect a volt meter or an oscilloscope to **TP10** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

6) Turn power switch **ON** and check voltage reading for approximately **3.0 volt**. If incorrect, adjust with **VR7** on **Image Scanner PCB** for the correct value. **(See figure 6).**
   ※ Turning **VR** clockwise increases the sensitivity and voltage level.

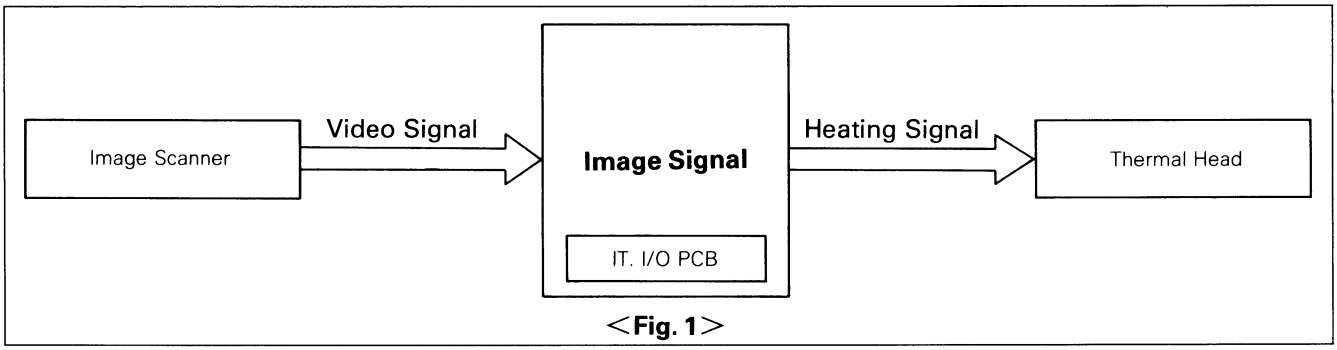
7) After adjustment, never fail to make "compensation with shading". **(Refer to P.II-17)**



<Fig. 6>

2. IMAGE SIGNAL

The Image Scanner CCDs produce the Video Signal, which is then sent to IT · I/O PCBs. This **Video Signal** is transformed into the **Image Signal** on IT · I/O PCBs.



<Fig. 1>

Note: The following adjustments must be made with the **Master-Making Density Dial** (on the sub panel) at the center and **Original Select Button** to the Photo mode.

1. VR8: Black Level Voltage Adjustment

1) Remove Upper Cover from the Master-making unit and by-pass safety switch.

2) Leave LED arrays of Image Scanner **OFF**.

3) Turn power switch off and connect a volt meter or an oscilloscope to **TP7** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

4) Turn power switch **ON** and check voltage reading for approximately **3.5 volt**. If incorrect adjust with **VR8** on **IT · I/O PCB (A)** for the correct value. **(See figure 2)**
※ Turning **VR** clockwise increases the voltage value.

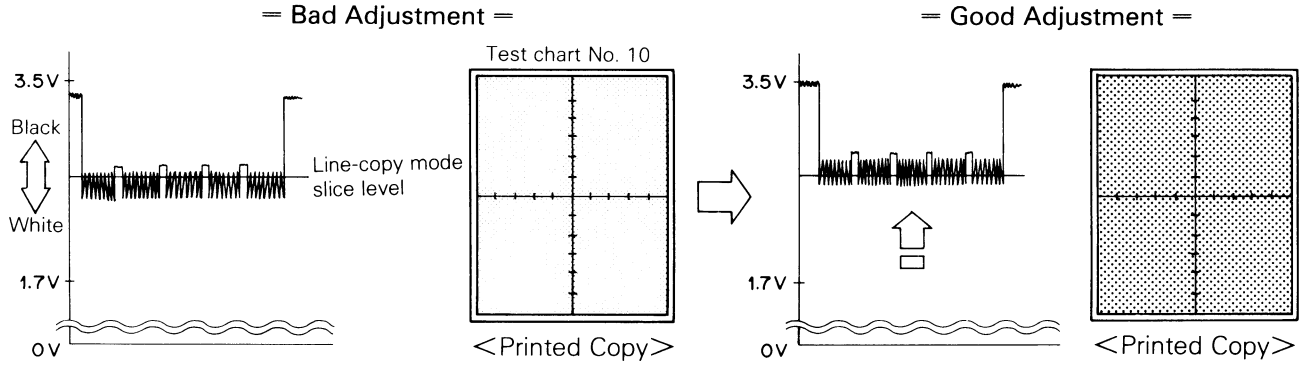
5) After adjustment, place a carrier sheet upside down (or a pure white sheet of paper) under the Image Scanner.
※ Make sure that there is no stain on a carrier sheet.

6) Locate **J1** on IT · I/O PCB (A) and remove a jumper on **Pins 4** and place it on **Pins 3** to light up the LED arrays of Image Scanner.

7) Remove a jumper on **Pins 6** and place it on **Pins 5** and then back to **Pins 6**. Leave it as it is for more than **30 seconds**. This step will reset 'compensation with shading'.
※ Do not move Image Scanner or machine during 'compensation with shading'.

8) Remove the carrier sheet and replace the jumper in **J1** (that lights up the LED arrays) to the normal position.

Important: VR8 works in conjunction with the Master-Making Density Dial located on the sub panel. So the dial must be at the center position. If it is not at the center position the correct voltage values will not be able to be obtained in adjustment procedures.



<Fig. 2>

2. VR7: The Overall Gain Voltage Adjustment

1) Remove Upper Cover from the Master-making unit and by-pass safety switch.

2) Place a carrier sheet upside down (or a pure white sheet of paper) under the Image Scanner.
※ Make sure that there is no stain on a carrier sheet.

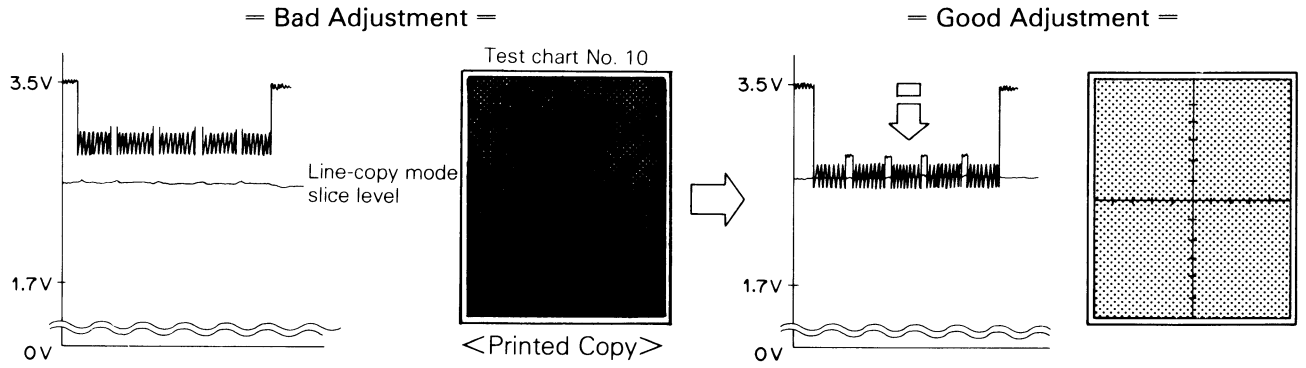
3) Locate **J1** on IT · I/O PCB (A) and remove a jumper on **Pins 4** and place it on **Pins 3**. This will light up the LED arrays.

4) Turn Power switch off and connect a volt meter or an oscilloscope **TP7** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

5) Turn power switch **ON** and check voltage reading for **1.7 volt**. If incorrect, adjust with **VR7** on **IT · I/O PCB (A)** for the correct value **(See figure 3)**.
※ Turning **VR** clockwise decreases the voltage value.

6) After adjustment, never fail to make "compensation with shading". **(Refer to P. II-17)**

Important: If the voltage value is set below 1.5 volt, 'compensation with shading' cannot be correctly performed.



<Fig. 3>

3. ADJUSTMENT PROCEDURES OF SLICE LEVELS

★ To the **Image Signal, 6** different slice levels are applied for image processing. Each slice level is used to judge the Image Signal during image processing. **(Refer to P.II-2)**

1. VR4: White Peak Slice Level Adjustment

This slice level is the basic level for the **Dither Matrix** image processing, and is used to determine the density of reproduced photo images.

1) Turn the power switch **ON** and set the Master-Making Density Dial (on the sub panel) at the **center** position.

2) Set the Original Select to the **Photo mode**.

3) Connect a volt meter or an oscilloscope to **TP3** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

4) Check voltage reading for **2.0 volt**. If incorrect adjust with **VR4** on **IT · I/O PCB (A)**.

2. VR3: White Level Slice Level Adjustment
VR2: Character Recognition Slice Level Adjustment

These two slice levels work together to distinguish the Image Signal of a character image from that for Dither Matrix image processing in the **Photo mode** and **Heavy solid mode**.
(Refer to P.II-10)

1) Turn **ON** the power switch and set the Master-Making Density Dial (on the sub panel) at the **center** position.

2) Set the Original Select to the **Photo mode**.

3) Connect a volt meter or an oscilloscope to **TP6** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

4) Check voltage reading for **2.2 volt**. If incorrect adjust with **VR3** on IT · I/O PCB (A).

5) Connect a volt meter or an oscilloscope to **TP5** for (+) terminal and **TP1** for (—) terminal on IT · I/O PCB (A).

6) Check voltage reading for **2.7 volt**. If incorrect adjust with **VR2** on **IT · I/O PCB (A)**.

3. VR5: Edge Stress Upper and Lower Slice Levels Adjustment

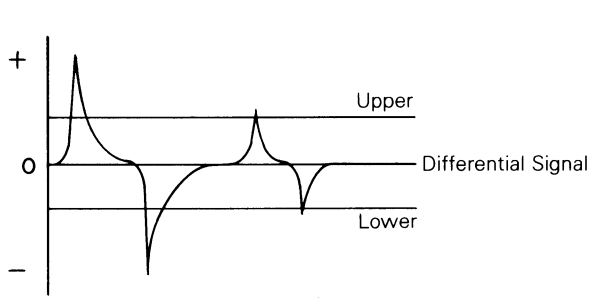
The Edge Stress slice levels (upper and lower) are used in the **Photo mode** and **Heavy Solid mode** to give a sharper contour to the image on a printed copy. These two slice levels are applied to the differential signal of the Image Signal. So it is impossible to check voltage reading for the correct value from test points on IT · I/O PCB (A). **(Refer to P. II-12)**

1) Turning **VR5** on **IT · I/O PCB (A)** clockwise will narrow the margins.

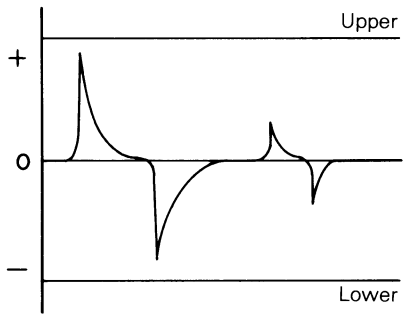
Attention: If it is too narrow, too many dots or too strong edge lines will appear in photo images.

2) Turning **VR5** counter-clockwise will increase the width of the margins.

Attention: If too wide, the image or character in photo images will appear fuzzy.



[Too Narrow]



[Too Wide]

4. VR1: Line-copy Mode Slice Level Adjustment

This slice level is used in **Line-copy mode** to judge if the image is white or black. **(Refer to P. II-14)**

1) Turn the power switch **ON** and set the Master-Making Density Dial (on the sub panel) at the **center** position.

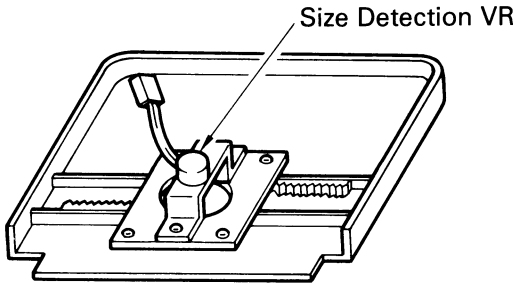
2) Set the Original Select to the **Line-copy mode**.

3) Connect a volt meter or an oscilloscope to **TP2** for (+) terminal and **TP1** for (−) terminal on **IT · I/O PCB (A)**.

4) Check voltage reading for **2.6 volt**. If incorrect adjust with **VR1** on **IT · I/O PCB (A)**.

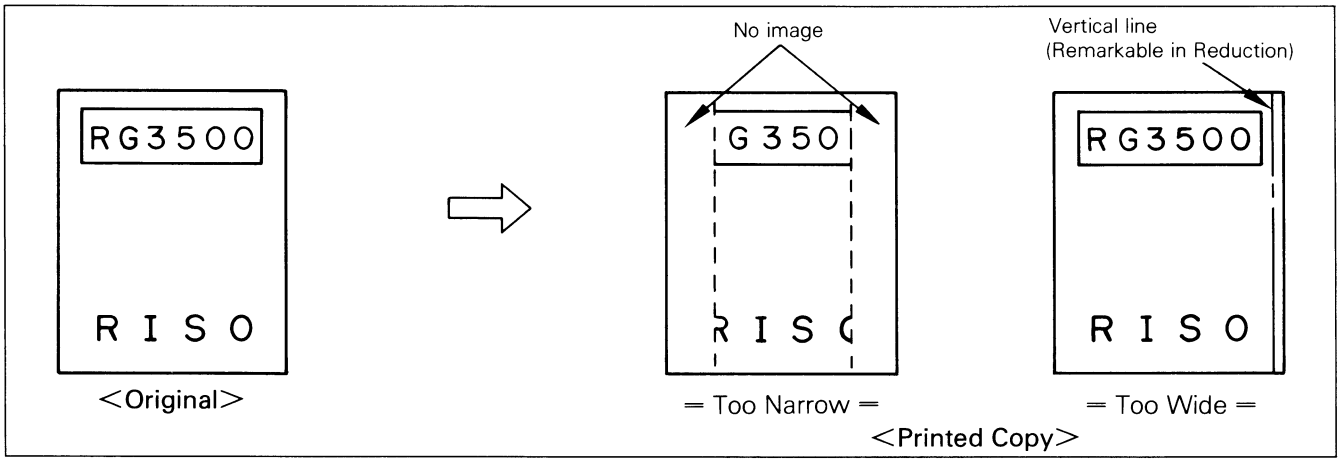
4. AUTOMATIC DETECTION OF ORIGINAL WIDTH

In RG3500 the original width is automatically detected with the **Size Detection VR** mounted on the reverse side of the Original Holder. **(See the figure below.)** The **VR** rotates in conjunction with the original side guides to determine the readable and processable width of an scanned image.



On IT · I/O PCB (A), based on the resistance signal sent from the **Size Detection VR**, the width of the Image Signal to be processed is determined to conform with the original width.

If the printed copy has the problems as in the figure below, adjust 'Automatic Detection of Original width' with **VR9** on **IT · I/O PCB (A)**.



VR9: 'Automatic Detection of Original Width' Adjustment

The image processable width can be adjusted with **VR9** on **IT · I/O PCB (A)**.

- Clockwise rotation will narrow the Processable width of the image
- Counterclockwise rotation will widen the Processable width of the image

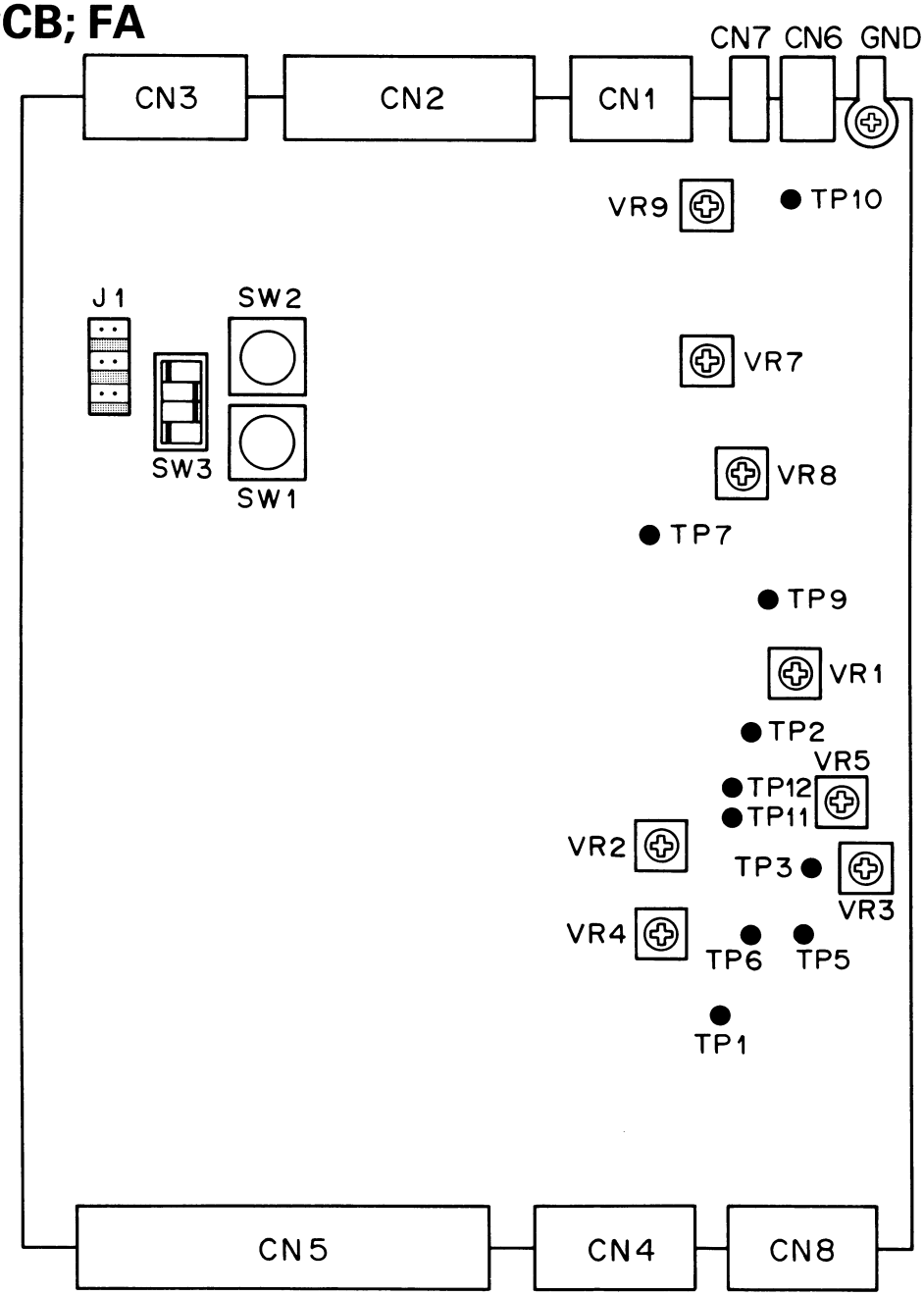
Note: When adjusting the width, be sure to adjust the width a little smaller than the original width. This will eliminate the shadowing from the edge of the original to the Read Roller. The recommendable void on each side of the printed copy is 4 mm ± 2 mm.

REFERENCE

The Reference Chart for Setting the Pulses of Thermal Power
[for RISOGRAPH ‹P› MASTER]

The Value of Resistance (Ω)	1st Pulse	2nd Pulse
1600 ~ 1607	01A	015
1608 ~ 1629	01B	015
1630 ~ 1667	01B	016
1668 ~ 1705	01C	016
1706 ~ 1728	01C	017
1729 ~ 1781	01D	017
1782 ~ 1789	01D	018
1790 ~ 1850	01E	018
1851 ~ 1856	01F	018
1857 ~ 1910	01F	019
1911 ~ 1932	100	019
1933 ~ 1971	100	01A
1972 ~ 2008	101	01A
2009 ~ 2032	101	01B
2033 ~ 2084	102	01B
2085 ~ 2093	102	01C
2094 ~ 2153	103	01C
2154 ~ 2160	104	01C
2161 ~ 2214	104	01D
2215 ~ 2236	105	01D
2237 ~ 2275	105	01E
2276 ~ 2312	106	01E
2313 ~ 2336	106	01F
2337 ~ 2388	107	01F
2389 ~ 2396	107	100
2397 ~ 2457	108	100

IT · I/O PCB; FA



‹TP: Test Point›

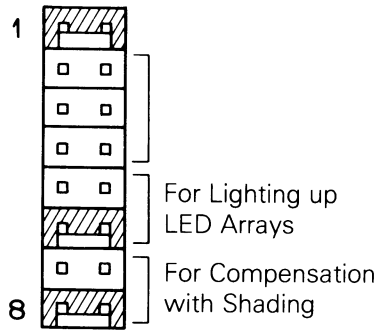
1. Ground
2. Line-copy mode slice level
3. White Peak slice level
5. Character Recognition slice level
6. White Level slice level
7. Image Signal
9. Differential Signal of Image Signal
10. CCD Video Signal
11. Edge Stress Upper slice level
12. Edge Stress Lower slice level

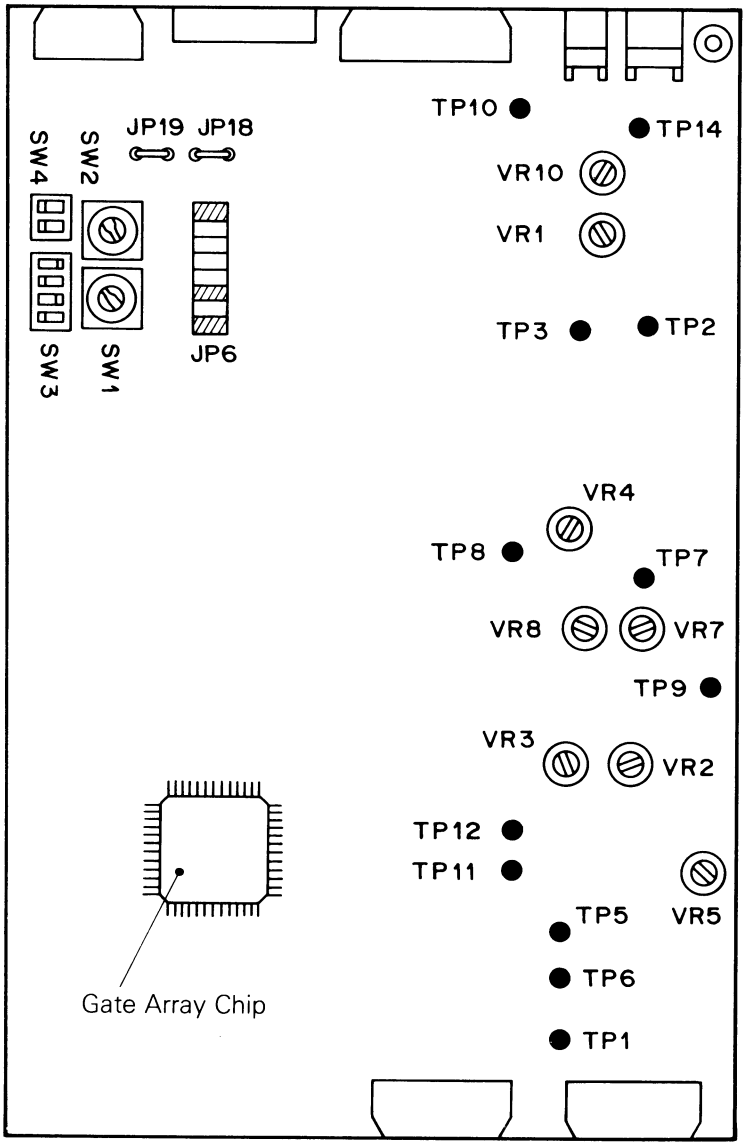
‹VR›

1. Line-copy mode slice level
2. Character Recognition slice level
3. White Level slice level
4. White Peak slice level
5. Edge Stress slice levels
7. The Overall Gain Voltage Adjsutment (Image Signal)
8. Black Level Voltage Adjustment (Image Signal)
9. 'Automatic Detection of Original Width'al Adjustment

IT·I/O PCB (GA) — FA

<JP6>





= NOTICE =

1) The turning direction of VR4 has been reversed.
2) J1 (6 pins) has been replaced with JP6 (8 pins).
3) VR9 has been replaced with VR10.

‹TP: Test Point›

1. Ground
2. Line-copy mode slice level
3. White Peak slice level
5. Character Recognition slice level
6. White Level slice level
7. Image Signal
8. +5 volt
10. CCD Video Signal
14. Ground

‹VR›

1. Line-copy mode slice level
2. Character Recognition slice level
3. White Level slice level
4. White Peak slice level
5. Edge Stress slice levels
7. The Overall Gain Voltage
8. The Basic Black level Voltage
10. Automatic Detection of Original Width